

## REMARKS

Applicant respectfully requests reconsideration of this application as amended.

### Office Action Rejections Summary

Claims 1-16 and 22-24 have been rejected under 35 U.S.C. §112, first paragraph.

Claims 1, 2, 8, 11, 12 and 22 have been rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent Publication No. 20020025408 of Davis (“Davis”).

Claims 3-6 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of U.S. Patent No. 5,956,216 of Chou (“Chou ‘216”).

Claim 10 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis.

Claim 7 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Chou and further in view of U.S. Patent No. 6,309,580 of Chou (“Chou ‘580”).

Claim 9 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of J. Vac. Sci. Technol. B, Vol. 18, No. 4, Jul/Aug 2000 of Faircloth (“Faircloth”).

Claims 13-16 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis.

Claim 21 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Faircloth.

Claims 18 and 19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Faircloth and further in view of Chou ‘216.

Claims 23 and 24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Chou ‘216, Chou ‘580, and U.S. Patent No. 4,786,564 of Chen (“Chen”).

### Status of Claims

Claims 1-16, 18, 19, 21-24 are pending in the application. Claims 1, 2, 12, 14 and 16 have been amended. The amended claims are supported by the specification, for example, in paragraph 0056 of the present application. No claims have been added. No new matter has been added. No claims have been canceled by this amendment.

### Claim Rejections

Claims 1-16 and 22-24 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicant respectfully disagrees with the Office Action’s assertions. Nevertheless, it is submitted that the rejection is moot due to the amendment of claim 1. Therefore, withdrawal of the rejection under 35 U.S.C. §112, first paragraph of claims 1-16 and 22-24 is requested.

Claims 1, 2, 8, 11, 12 and 22 have been rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Davis.

Claim 1, as amended, recites:

A method, comprising:

heating a stamper and a resist film;  
imprinting the stamper into the resist film;  
separating the stamper from the resist film before the resist film is cooled below approximately a glass transition temperature of the resist film; and  
cooling the resist film below the glass transition temperature after the separating.

In response to the Applicant's arguments, the Office Action states:

These arguments are not persuasive for the following reasons:

a and b) Firstly, (Page 11, beginning at line 2) "The applicant asserts that paragraph [0075] of Davis discloses that the substrate is placed in the mold (first sentence), the substrate temperature is modified as necessary to emboss the mold (second sentence), and finally the substrate is cooled before removing it from the mold to ensure surface integrity (third sentence). (Davis, page 8, paragraph [0075])."

In response, the Examiner asserts (1) that the substrate temperature is not necessarily modified, but may be instead *maintained*, and (2) that the second sentence pertains also to the temperature at removal. Davis teaches that the temperature can be "maintained...as necessary in order to optimize replication and enable substrate release from the mold while maintaining the integrity of the surface features." (emphasis added, second sentence of [0075]). **Maintaining the integrity of the surface features occurs at removal (third sentence of [0075]). Thus, the Examiner asserts that the second sentence pertains also to the removal step,** and in at least one embodiment, the temperature is maintained while removing from the mold.

However, in the alternative, the Examiner asserts that Davis clearly teaches temperature throughout the process to be a result effective variable that should be optimized in order to maintain the integrity of the surface features.

(Office Action, 1/24/07, page 12)(emphasis added).

Applicants respectfully disagree with Office Action's reading of the second sentence of paragraph [0075] of Davis, and submit that the conclusions reached therein are inapposite. That an operation maintains the integrity of the surface features does not, ipso facto, mean that such operation is a removal operation. The maintenance of surface feature integrity is not affected only by removal operations but also may be affected by parameters at other operations such as, for example, temperature before embossing, temperature and pressure at initial contact and applied pressure during compressing. Therefore, it is submitted that the teachings that the temperature can be maintained after the substrate is placed in the mold and still maintain the integrity of the surface features (Davis, paragraph [0075], second sentence) do not, ipso facto, apply to the removal operation.

As supported by the declaration of David Treves (one of ordinary skill in the art of manufacturing magnetic recording disks using embossing techniques), one of ordinary skill in the art would understand the second sentence of paragraph [0075] of Davis to pertain to what may be done with the temperature immediately after the mold is brought into contact with the substrate. As further supported by the declaration of David Treves, the third sentence of paragraph [0075] of Davis does not refer to an “alternative” embodiment as purported by the Office Action, but rather, is the next step in the same embodiment described by paragraph [0075]. One of ordinary skill in the art, when reading the entire paragraph [0075], would understand the third sentence of paragraph [0075] Davis to explicitly teach that the molded substrate is cooled to below the glass transition temperature prior to removal from mold in order to maintain the integrity of the surface features.

For at least the foregoing reasons, it is submitted that the Davis reference does not disclose all the limitations of claim 1 of the present application to one of ordinary skill in the art, and that claim 1 would not be obvious in view of the teachings of Davis to one of ordinary skill in the art. For similar reasons, it is submitted that claims 2, 8, 10, 11, 12, 13-16 and 22 are patentable over Davis, given that claims 2, 8, 10, 11, 12, 13-16 and 22 depend from and include the limitations of claim 1.

Claims 3-6 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of U.S. Patent No. 5,956,216 of Chou (“Chou ‘216”). Claim 7 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Chou and further in view of U.S. Patent No. 6,309,580 of Chou (“Chou ‘580”). Claim 9 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of J. Vac. Sci. Technol. B, Vol. 18, No. 4, Jul/Aug 2000 of Faircloth (“Faircloth”). Claims 23 and 24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Chou ‘216, Chou ‘580, and U.S. Patent No. 4,786,564 of Chen (“Chen”).

It is respectfully submitted that none of the secondary references cure the deficiencies noted above with respect to Davis and, therefore, claims 3-7, 9 and 23-24 are patentable over the combinations of cited references.

Claim 21 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Faircloth. It is submitted that claim 21 is patentable over the cited references. The Office Action states, in part:

Davis appears to be silent to the multilayer resist. However, Faircloth teaches that bilayer resists are conventional in nanoimprint lithography (see the entire document). It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Faircloth into that of Davis for the following reasons:

- (1) because single layer resists are known to be problematic (Faircloth, page 1, right column).
- (2) because doing so would provide higher resolution arrays of particles, lines, and crosshatches.
- (3) in order to provide layers having distinct characteristics, such as different etching characteristics (Faircloth, page 3, right column).
- (4) Davis clearly does suggest vapor deposition of metals ([0080]\_ and other magnetic materials onto the formed surface of the polymer material. Faircloth provides a bilayer resist which enhances the ability to descum the bottom of the trenches (page 3, right column), which would be desirable prior to vapor deposition of metals.

(Office Action, 1/24/07, pp. 8-9).

The Examiner is respectfully reminded that the mere fact that references can be combined or modified is not sufficient to establish *prima facia* obviousness unless the prior art also suggest the desirability of the combination. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990); MPEP 2143.01. It is submitted that the Examiner is impermissibly using hindsight, based on the applicant's own disclosure, to arrive at applicant's invention.

It is respectfully submitted that the reasoning provided by the Examiner is not a proper motivation to combine references. The only purported motivation for a combination that has been identified by the Examiner is features of the Faircloth bilayer

resist film process. However, the law requires that, to prevent the use of hindsight, an examiner "must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998)(emphasis added)(Also see MPEP 2142 as well as MPEP 2145).

First, it is submitted that paragraph 0080 of Davis cited by the Office Action does not teach or suggest the vapor deposition of metals. If the Examiner continues to purport such, the Examiner is respectfully requested to more precisely quote language from paragraph 0080 that evidences such. For the sake of argument, even if Davis were to suggest the vapor deposition of metals, Davis does not teach any problems confronting them with vapor deposition of metals. Accordingly, one of ordinary skill in the art would not be motivated to look to the teachings of Faircloth because such was not a problem in Davis that would have motivated one of ordinary skill in the art to do so.

In addition, it is submitted that one of ordinary skill in the art confronting the problems of Davis would not be motivated to look to the teachings of Faircloth for at least the following reasons. One of the problems confronting Davis was to produce disks at lower prices (see paragraph [0010]). It is submitted that the use of a bilayer resist film would add additional material expense to the manufacturing of disks taught by Davis. Accordingly, one of ordinary skill in the art would be de-motivated to combine the techniques of Faircloth where there is no specific stated problem of Davis that would be specifically addressed by Faircloth. In particular, since Davis does not disclose transferring patterns using metal liftoff, one of ordinary skill in the art would not be motivated to look to the metal liftoff teachings of Faircloth (Faircloth, page 1, paragraph 3) for combination with Davis. In other words, since Faircloth teaches that bilayer photoresists are used to solve a problem that occurs only when transferring a pattern via metal liftoff, and Davis does not perform metal liftoff, there was no motivation in the art

at the time of the present invention to combine the teachings of Faircloth to Davis.

Therefore, it is submitted that claim 21 is patentable over the cited references.

Claims 18 and 19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Davis in view of Faircloth and further in view of Chou '216. Claims 18 and 19 depend from claims 21. It is submitted that Chou fails to cure the deficiencies noted above with respect to claim 21 and, therefore, claims 18 and 19 are patentable over the cited references.

In conclusion, applicants respectfully submit that in view of the arguments and amendments set forth herein, the applicable rejections have been overcome.

If the Examiner believes a telephone interview would expedite the prosecution of this application, the Examiner is invited to contact Daniel Ovanezian at (408) 720-8300.

If there are any additional charges, please charge our Deposit Account No. 02-2666.

Respectfully submitted,

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